

Claims:

1. A fastening device (14) for lashing a load, in particular a container to a ship,
comprising:
5
a frame (15) having at least one opening and means (27) for connecting to either the
ship or the container,
a rod (18) with corrugations, said rod being received in and movable through said at
10 least one opening and including means for connecting to either the ship or the
container,
a holding device (20) comprising at least two locking elements (20a, 20b), each locking
element including at least one surface comprising dents/grooves partly or totally
15 corresponding to said corrugations,
at least said frame (15) or said holding device (20) being provided with an at least
partly tapered shape, and
20 resilient means (21) urging said holding device (20) towards said frame (15) and
thereby said locking elements (20a, 20b) towards each other.
2. A fastening device according to claim 1, wherein said fastening device includes a
second rod (25, 27) with shock absorbing spring means (26) such as a number of plate
25 springs forced against said frame (15).
3. A fastening device according to claim 1 or 2, wherein said frame (15) comprises two
longitudinal frame walls (15a, 15b) connected in an upper end by a transverse wall (19)
comprising contact surface for said holding device (20), in the lower end by a second
30 transverse wall (22b) comprising a contact surface for said shock absorbing spring
means (26) and in between by a third transverse section (22) comprising contact
surface for said spring means (21) forcing said holding device (20) against said contact
surface of said frame.

4. A fastening device according to one or more of the preceding claims, wherein the holding device (20) includes release spring means (36) in between said surfaces comprising dents/grooves.
- 5 5. A fastening device according to one or more of the preceding claims, wherein the frame (15) and/or said holding device (20) comprises a substantially conical, frustoconical, triangular, pyramidal or a similar tapered shape.
6. A fastening device according to one or more of the preceding claims, wherein said
10 dents/grooves of said surface are reversed frustoconical shaped, and/or said rod (18) with corrugations comprises reversed frustoconical sections establishing the corrugations.
7. A fastening device according to one or more of the preceding claims, wherein said rod
15 (18) and/or said holding device (20) comprises contact surfaces (24, 33) for handling tools.
8. A fastening device according to one or more of the preceding claims, wherein said spring means (21) is a helical spring.
- 20 9. A method of establishing a fastening connection between a ship and a container, said method comprising the steps of:

connecting a frame of said fastening device the ship and a rod with corrugations to a
25 lashing bar connected to the container, said rod being movable through and received in the at least one opening of said frame,

engaging said rod with corrugations by at least two locking elements of a holding device, at least said frame or said holding device comprising an at least partly tapered
30 shape, and

forcing said holding device against said frame by resilient means and thereby urging said locking elements against each other.

10. A method according to claim 9, wherein said holding device or said rod with corrugations is released or tightened by a handling tool engaging with contact surfaces of said holding device or said rod with corrugations.

5 11. Use of a fastening device according to any one of the claims 1 to 8 and method of establishing a fastening connection between at least two elements according to claim 9 or 10 in relation with fastening of cargo such as lashing of shipping containers.

12. An assembly for securing a container to a ship comprising:

10

a lashing bar connected at one end to the container and at the other end to the first part of a fastening device,

15

the fastening device comprises a second part connected to the ship, the first part and second part being movable relative to one another in the longitudinal direction of the lashing rod; and

20

said fastening device comprises locking means that allow the first and second parts to move substantially unhindered towards one another whilst preventing the first and second parts from moving away from one another.

13. An assembly according to claim 12, wherein first part comprises a corrugated surface, and the locking means comprise at least one locking element provided with one or more protrusions for engaging the serrated surface in the first part.

25

14. An assembly according to claim 13, wherein the engagement between the locking element and the corrugated surface of the first part is self-amplified upon a load that urges the first part and the second part away from one another.

30

15. An assembly according to claim 14, wherein the engagement between the locking member and the corrugated surface of the first member is self-releasing upon a load that urges the first member and the second member towards one another.

35

16. An assembly according to claim 14 or 15, wherein the self-amplification and self-release are caused by a wedge effect.

17. An assembly according to claim 14 or 15, wherein the self-amplification and self release are caused by a lever effect.
- 5 18. An assembly according to any of claims 13 to 17, wherein the locking element is urged by resilient means to engage with the corrugations in the first part.
19. An assembly according to any of claims 13 to 18, wherein the locking element is connected to a release mechanism that moves the locking element against the bias of the resilient means out of engagement with the corrugated surface of the first part.
- 10 20. An assembly according to claim 12, wherein the first part comprises a substantially cylindrical member and helical spring disposed coaxially over the cylindrical member, the helical spring engaging and locking the cylindrical member when a load that urges the first part and the second part away from one another is applied, and the helical spring disengaging the cylindrical member when a load that urges the first part and the second part towards one another is applied.
- 15 21. An assembly according to claim 20, wherein the cylindrical member is provided with a helical groove for engaging the helical spring.
- 20 22. An assembly according to claim 12, wherein the first part is a piston rod of a hydraulic cylinder with two chambers and the second part is the cylinder part of a hydraulic cylinder or vice versa, the chambers of the hydraulic cylinder being in fluid communication through a conduit provided with a one way valve allowing fluid to flow from one chamber to another when the first part and the second part are moving towards one another, whilst preventing fluid to flow from one chamber to another when the first part and the second part are moving away from one another.
- 25 23. An assembly according to claim 22, wherein the chambers are in fluid communication via another conduit provided with an on-off valve.
- 30